

Integrated Logistics Support Plan

For The

Digital Voice Recorder System



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APPROVAL PAGE

This revision of the Integrated Logistics Support Plan (ILSP) for the Digital Voice Recorder System (DVRs) has been updated to all changes to reflect the current program status.

This ILSP presents the procedures necessary to accomplish the National Airspace Integrated Logistics Support (NAILS) requirements for the DVRs.

The Associate Product Lead for Logistics (APLL) is the point of contact for all NAILS related matters of this project.

Approval of this document constitutes the baseline for the ILSP. Any additional changes will require coordination with the NAILSMT members.

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CHAPTER 1. INTRODUCTION

This Integrated Logistics Support Plan (ILSP) for the Digital Voice Recorder System (DVRS) project provides guidance for integrated logistic support planning and execution and will be updated as life cycle support requirements change.

1.1 Background

The Federal Acquisition Streamlining Act (FASA) of 1994 provides for the establishment of a Federal Aviation Administration (FAA) Acquisition Pilot Program. The DVRS has been selected as the Acquisition Pilot Program within the Department of Transportation. Under FASA of 1994, the Secretary of Transportation is authorized to waive many of the provisions of the Federal Acquisition Regulation that are not required by statute, thus providing the FAA the flexibility in procurement procedures for Non-Development Items (NDI).

National Airspace Integrated Logistics Support (NAILS) is often the most difficult aspect of any NDI acquisition. Shortened schedules, technology driven configuration changes and utilization of Commercial-off-the-Shelf (COTS) training, all contribute to the challenge of NDI logistics support. To successfully deploy an NDI alternative means that supportability becomes an even more critical issue. Every NDI acquisition requires an individualized logistics support strategy, based upon that acquisition's specific characteristics. The development and execution of an NDI support strategy will require innovative and non-traditional approaches.

The DVRS project is divided into three distinct phases. Phase I is under Capital Investment Plan (CIP) 22-11, Multichannel Voice Recorders. Phase I will provide replacement recorders to Airport Traffic Control Tower (ATCT), Terminal Radar Approach Control (TRACONS) and a very limited number of Air Route Traffic Control Centers (ARTCCs). Phases II and III will be funded under the Voice Recorder Replacement Program, CIP C-23. Phase II and III will provide recorders to Automated Flight Service Stations (AFSSs) and ARTCCs.

The DVRS contract was awarded to LITTON DENRO Incorporated, Gaithersburg, Maryland on August 4, 1995.

1.2 Purpose of ILS Plan

This document describes the NAILS planned for the DVRS. Included are government and contractor responsibilities, a management matrix, maintenance requirements and a description of NAILS elements. Also included are applicable referenced documents (Appendix A), as well as abbreviations, acronyms and definitions (Appendix B), points of contact (Appendix C), disposal plan (Appendix D), and the equipment return form (Appendix E).

NAILS is an interrelated, unified, and iterative approach to the managerial and technical activities which support the National Airspace System (NAS). The analyses associated with NAILS influences the system design to minimize life-cycle cost. Through this program, support requirements are identified and acquired.

Management attention on key logistics issues is focused through eight logistic support elements that are required for NAILS task completion. These logistic support elements are as follows:

- 1) Maintenance Planning;
- 2) Supply Support;
- 3) Support Equipment;
- 4) Training, Training Support and Personnel Skills;
- 5) Direct-Work Maintenance Staffing;
- 6) Maintenance Support Facilities;
- 7) Packaging, Handling, Storage, and Transportation (PHS&T);
- 8) Technical Data.

The logistics support requirements generated in response to each of these elements are based upon the life cycle maintenance requirements for the DVRS. Each of the above logistics support elements is covered in detail in subsequent sections of this ILSP.

1.3 System Description

The DVRS is a multichannel modular digital voice recorder and reproducer system. The digital voice recorder is utilized to record all air-ground (A/G) voice communications between air traffic controllers and pilots, and ground-ground (G/G) intra and interfacility communications between air traffic personnel. The reproducer is designed for playback of call files and reproducing call files that have been recorded on digital audio tape (DAT) onto a standard cassette tape. Call files can be searched for playback using channel, time/date, or a combination of both parameters. The reproducer will

provide the capability to playback selected recording from the digital voice recorder for transcription, evaluation and training purposes. The digital voice recorder consists of a digital recorder unit (DRU), control workstation, two speakers, external alarm with optional global positioning system (GPS) antenna receiver, uninterruptable power supply and AC line conditioner (if required). The reproducer system consists of a DRU, control workstation, time code display, two channel cassette tape player and speakers. The recorded data is stored on four(4) mm digital audio tape(DAT).

1.4 System Schedule and Logistics Milestones

All DVRS and on-site spares if required will be shipped to operational facilities in accordance with the contract schedule. The following Table 1.4-1 lists the system schedule and logistics milestones.

TABLE 1.4-1 System Schedule and Logistics Milestones

EVENT	SCHEDULE
1. Initial NAILSMT Meeting	June 1994
2. Issue Qualification Package	January 1995
3. Complete Technical Evaluation	July 1995
4. Initial ILSP Approval Date	October 1995
5. Award Contract	August 1995
6. Post Award Conference	August 1995
7. Training Guidance Conference	August 1995
8. Provisioning Conference	2nd Qtr of FY98
9. First System Delivery	September 1995
10. First Airway Facilities(AF)Training	September 1995
11. Deployment Readiness Review EXCOM Decision	January 1996
12. Last System Delivery Date	FY 2002

1.5 Interface Capability Requirements

The DVRS equipment will provide and support the following interfaces:

- Audio Inputs
- IRIG-B Time Code Synchronization Input
- Audio Output Jack
- Earphone Jack
- RS-232 Interface
- Remote Alarm Interface

External Speaker Interface
Distribution Interface

CHAPTER 2. LOGISTICS MANAGEMENT

This section describes the organizational structure and responsibilities of the contractor and the Government with respect to the planning and execution of logistics support.

2.1 National Airspace Integrated Logistics Support Management Team

The APLL for the DVRS project is responsible for establishing an NAILSMT to support the project. The NAILSMT will provide guidance, coordination, and support for all logistics requirements of the DVRS life-cycle. Guidance on responsibilities of the NAILSMT is contained in FAA Order 1800.58A. The NAILSMT membership and offices that will support this program are listed in Table 2.1-1.

TABLE 2.1-1 NAILSMT MEMBERSHIP

POSITION	OFFICE
Chairperson, APLL	ARN-200, Communications and Navigation Division
Co-chairperson, Product Leader	AND-320, Integrated Product Team for Voice Switching and Recording Program
Member	ARN-200, Communications and Navigation Division, Air Traffic Requirements
Member	ARN-200, Communications and Navigation Division, Airway Facilities Requirements
Member	AFZ-100, Airway Facilities Training Division
Member	ATX-100, Air Traffic Training Division
Member	AFZ-200, Work Force Planning and Development Division
Member	AOS-7, Hardware Contract Maintenance Team
Member	AOS-510, Communications Engineering Support Branch
Member	AML-6000, Communications Products Division
Member	AMA-410, Communications Division
Member	AMA-551, Terminal Instructional Design Section
Member	ARN-200/NISC Support

POSITION	OFFICE
Member	AXX-400/500 Regional Associate Program Manager

2.2 Government Organizational Structure and Responsibilities

The following presents the FAA activities responsible for providing management and technical support for the DVRS project.

ARN-200 - The Communications and Navigation Division is responsible for the overall Life-Cycle Management for NAS Communications Systems, Equipment, Technical and Maintenance requirements. It coordinates disposal of systems and equipment for Airway Facilities, supports the NAILS process, manages the acquisition to operational process, oversees configuration management processes, and monitors depot level spares and repair parts. To ensure logistics support for systems, ARN-200 appoints an APLL and support team to direct and manage the logistics portions of the project.

ARN-200/APLL - The APLL reviews all NAILS requirements for each project and provides guidance to the Product Leader and other project personnel to accomplish the project with timely integration of requirements for the project development, acquisition and Life-Cycle Support.

ARN-200/AT Requirements - The AT Requirements Specialist is responsible coordinating and recommending AT requirements for existing and planned systems in the NAS.

ARN-200/AF Requirements - The AF Requirements Specialist is responsible for developing and recommending Airway Facilities (AF) maintenance and NAILS long-range plans, policies, site sparing methodologies and maintenance requirements for existing and planned facilities and services in the NAS.

ARN-200/NISC - The NAS Implementation Support Contractor works with FAA logistics representatives in developing, coordinating, and integrating logistics support, and life cycle management of NAS equipment.

AND-320 - The Integrated Product Team for Voice Switching and Recording Program provides management direction for the DVRS project. The Product Leader oversees the acquisition, design, development, testing, and commissioning of the project. The Product Leader is also responsible for the budget, contract, and all activities necessary to acquire and support the project through deployment.

AOS-7 - The Hardware Contract Maintenance Team office is responsible for managing contracts for depot maintenance.

AFZ-100 - The Training Division is responsible for analyzing AF maintenance training requirements for the DVRS project. AFZ-100 is also responsible for obtaining training funds and scheduling training.

AFZ-200 - Work Force Planning and Development Division develops and issues policies, standards, and guidelines relating to airway facilities maintenance coverage and response, position classification, career development, technical training requirements, certification of technical training requirements, certification of technical field personnel, and field organization.

ATX-100 - The AT Training Division is responsible for analyzing AT training requirements for the DVRS. ATX-100 is also responsible for coordinating and scheduling AT training.

AMA-410 - The Communications Division is responsible for technical evaluation of AF training developed and conducted by the contractor. It also has the responsibility for conducting new equipment training and attrition training.

AMA-551 - The Flight Service Instructional Design Section is responsible for technical evaluation of training which is developed and conducted by the contractor. It also has responsibility for developing attrition training materials.

AOS-510 - The Facility System Engineering Branch, is responsible for direct engineering support for field facilities. This includes software maintenance and updating; publishing and issuing of directives; and in-service improvement and modification development, evaluation, and implementation for NAS systems as assigned.

AML(FAALC) - The Federal Aviation Administration Logistics Center(FAALC) is responsible for provisioning, supply support, and the management of depot-level maintenance, whether performed by the FAA or by a contractor.

AXX-400/500 - These individuals represent their respective regions and provide a communications link for system, FAA, and contractor requirements for the implementation, operations, and life cycle support of the DVRS project.

CHAPTER 3. MAINTENANCE PLANNING

This section describes the maintenance concept for the DVRS.

3.1 Maintenance Concept

The DVRS equipment will be supported using two levels of maintenance: field and depot. The FAA performs Field maintenance. The contractor performs depot maintenance.

3.1.1 Field Maintenance. Field maintenance will be performed by FAA technicians and consists of fault isolation of the failure to the line replaceable unit (LRU) level, replacing it with a serviceable LRU and certifying the repair. Preventive field maintenance will be performed in accordance with performance checks specified in a FAA Notice N6670.31, Interim Certification, Standards and Tolerances, Operational Configuration Parameters for the Digital Voice Recorder. The cancellation date for this notice is October 15, 2000. This notice was developed by AOS-510 to address digital recording.

The FAA will assume field maintenance responsibilities immediately following government acceptance of the DVRS at the site.

3.1.2 Depot Maintenance.

LITTON DENRO Incorporated will perform depot maintenance of the DVRS for the life cycle of the equipment.

3.2 Second Level Engineering Support

This section outlines the procedures for obtaining second level engineering support for commissioned and pre-commissioned DVRS sites.

3.2.1 Commissioned Sites.

Second level engineering support and technical assistance will be managed and provided by AOS-510 for all commissioned sites. Sites should call AOS-510 at the following numbers for technical assistance:

(405) 954-0066 (0800 to 1630 CST, normal duty hours)

(405) 954-3583 (after normal duty hours)

If assistance is required from the contractor, LITTON DENRO Inc., AOS-510 will arrange for this support.

3.2.2 Pre-Commissioned Sites.

Any site that is not commissioned should contact LITTON DENRO, Inc. for technical assistance. The telephone number at LITTON DENRO, Inc for technical assistance is (301) 869-1628.

3.3 DRU Air Filter

The DVRS requires periodic replacement of the DRU air filter. Refer to FAA notice 6670.31 for cleaning and reuse instructions. Sites can order the air filter, part number 260908-001 through the LIS or the air filter can be locally purchased. Two air filters per DRU are provided with the DVRS.

3.4 Uninterruptable Power Supply

The DVRS uninterruptable power supply (UPS) eventually will need a replacement battery. If the site technician determines a battery is required they must find a local source for procurement. The site will contact the Customer Care Center to arrange for the FAALC to issue a PR to that source. Batteries are not stocked at the FAALC due to OSHA requirements.

CHAPTER 4. SUPPLY SUPPORT

This section describes the methods used for supplying spare and repair parts for maintenance of DVRS equipment, and includes the planned method for obtaining and storing spare parts, both common and parts-peculiar, needed to support the maintenance activities.

4.1 Responsibilities

1. Site Spares: A detailed analysis of the reliability, maintainability and availability of the DVRS has resulted in the following recommendations. Initial site spares will be provided to all ARTCCs, Level IV and V facilities, CERAPs and selected remote locations. Per AAF-2, any other facilities with ARTS III will receive site spares. Additionally, site spares will be provided to selected System Maintenance Office (SMO) or Work Center (WC) in each region. The determination of which SMOs or WCs will be coordinated with the appropriate RAPM.

This site sparing methodology has been re-evaluated by ARN-200. Operational availability levels were closely monitored. Currently there is not a requirement to modify the site spares kit to meet the life cycle support requirements of the DVRS.

The following list of site spares in quantities of one each will be provided to the selected locations discussed in the above procedures. This list includes the latest part numbers changes for the -6 chassis marked with an *.

<u>ITEM NAME</u>	<u>PART NO.</u>	<u>NSN</u>
ADIF Board	259101-001	5998-01-434-7526
ALI Board	259111-001	5998-01-434-7524
APA-4 Board	259112-001	5998-01-434-7525
LAF Board	259113-002	5998-01-434-7552
*Hard Drive	111886-002	7025-01-461-6098
*CPU Board	259361-001	5998-01-461-6100
*SCSI Board	259362-001	5998-01-462-5887
Power Supply	259091-002	6130-01-459-7357

2. Depot Spares: Depot spares will be stocked and provided by Litton Denro.

4.2 Warranty

All DVRS equipment will be completely operational when installed. The warranty begins when the site accepts the DVRS (one year warranty). After the equipment has been accepted and placed in service, the contractor will repair or replace all hardware, software and firmware received from the Government, which fails or become defective. The LRUs will be replaced or repaired to restore them to a serviceable condition, which meets the original performance specification.

4.3 Return of Unserviceable Repairables

Site's will return the unserviceable LRU within 5 days to Litton Denro Inc. IAW FAA Order 4250.9B, "Field Material Management and Control Handbook". Timely return of the unserviceable unit is required to support the repair pipeline and avoid potentially compromising support for other DVRS sites.

When an LRU is received from Litton Denro, site personnel will return the unserviceable LRU in the shipping container of the serviceable LRU to Litton Denro.

Maintenance personnel should complete the Litton Denro DVRS Equipment Return Document for all DVRS line replaceable units removed for return to the repair source. Return of the unserviceable unit must be accompanied by the Litton Denro DVRS Equipment Return Document which is included in each serviceable unit shipment. Any suspected defects or repair attempted should be documented in the "**Reason for Return**" section of the form (See Appendix E). This information will assist the repair facility in determining necessary repair action and documenting failure trends. A memorandum to this effect, dated April 7, 1998 has been distributed to all concerned personnel.

4.4 FAALC Supply Support

The FAA sites will use the Logistics and Inventory System (LIS) to requisition replenishment parts from Litton Denro through the FAALC.

Questions concerning warranty or requisition issues can be referred to the **FAALC Customer Care Center Toll Free at 1-888-322-9824, or (405) 954-3793**. If the Customer Care Center cannot answer your questions they can ensure correct routing to an individual at the FAALC who can assist you.

The following guidance for DVRS Warranty Service Operating Policy is effective May 1, 1996:

- a. Non-commissioned sites may utilize P2 or P5 Warranty service only.
- b. Commissioned sites may utilize P1, P2 or P5 Warranty service.

4.5 Recording Media

Recording Media: Each site will receive twenty (20) digital audio tapes (DAT) per DRU with the system delivery.

The following information should be utilized to requisition replacement DAT and cleaning cartridges through the Logistics Information System (LIS).

Description: Digital Audio Tapes
National Stock Number: 7045-01-414-5546
Ship Quantity: 5
Unit of Issue: each

Description: DAT Cleaner Cartridge
National Stock Number: 7045-01-366-5912
Ship Quantity: 2
Unit of Issue: each

4.6 Disposition of Replaced Equipment and Supporting Spares

Equipment and spares replaced by the DVRS will be removed and disposed of in accordance with FAA Order 4800.2C and AAF-1 Memorandum, "Disposition Decisions for Replaced Equipments", dated October 1, 1992. The Multichannel Recorder Disposal Plan (see Appendix D) was distributed via AND-320 memorandum dated July 15, 1996. This plan will assist FAA personnel in the removal of existing analog voice recorder, spares and associated support equipment.

CHAPTER 5. SUPPORT EQUIPMENT

This section describes support and test equipment, including all common and special tools, as well as any connectors or other interface devices necessary to connect the support equipment to the end item or Unit Under Test (UUT).

5.1 Common Tools

All necessary common tools and test/support equipment, for the DVRS equipment will be located on site or at the work center.

The following common tools will be required for the maintenance of the DVRS:

- Nut driver, 8 mm metric*
- Screwdriver, Philips head
- Screwdriver, Flathead
- Wrench, Small Crescent
- Pliers, Needle Nose

The following common test equipment or equivalent will be required for the maintenance of the DVRS:

- Audio Oscillator, HP 3325B, NSN 6625-01-297-9969
- TIMset, HP-4934A, NSN 6625-01-380-5252
- Oscilloscope, TDS420A, NSN 6625-01-422-3242

5.2 Special Tools

No special tools, test/support equipment, or special interface devices are required for maintaining the DVRS equipment.

5.3 Procurement and Distribution

*If the nut driver listed above is not available, facilities have the ability to procure the required tool using site preparation funds.

5.4 Maintenance and Calibration of Tools and Test Equipment

The maintenance and calibration of common tools and test equipment used for the maintenance of DVRS equipment is the responsibility of the regions.

FAA owned equipment will be calibrated in accordance with FAA Order 6200.4D. Calibration records will be kept for all equipment that requires calibration.

CHAPTER 6. TRAINING, TRAINING SUPPORT, AND PERSONNEL SKILLS

6.1 General

The purpose of this section is to provide information, which describes training requirements of FAA personnel responsible for the maintenance and operation of the DVRS. All training requirements and course prerequisites are identified. This training plan contributes to the planning, managing, developing and conducting the initial training. It serves as the foundation for transition and site-specific training plans.

6.2 System Training Requirements

6.2.1 Air Traffic (AT) Training. Air Traffic training is required for the personnel responsible for changing and reproducing tapes and conducting quality control. Air Traffic cadre instructors will be provided two quotas in the Operations and Maintenance course. If no AT personnel are available for the Operations and Maintenance course, AF personnel will provide operator instructions to the AT personnel.

6.2.2 Airways Facilities (AF). AF technicians will receive operations and maintenance training on-site following equipment installation.

6.3 Service Training Requirements

6.3.1 Airway Facilities.

6.3.1.1 Training Course Requirements. AF maintenance technicians from each location receiving the DVRS will be provided operations and maintenance training by the contractor on-site.

6.3.1.2 Personnel Skills. This paragraph summarizes the skills necessary to operate and maintain the DVRS equipment. Electronic technician prerequisite course's are listed below.

44013 Introduction to Computers
40509 or 44416 (Digital Techniques-CBI)

6.3.1.4 Training Courses.

1. The DVRS course #48241 is for personnel responsible for the operations and maintenance of the DVRSs and consists of theory of operation, system operation and evaluation, preventive maintenance procedures and fault analysis. Laboratory sessions will provide the student with practical skills in system operating procedures, system evaluation, routine test procedures, adjustments and fault isolation.
2. Course Hours: 24
3. Numbers to be trained: site class size is 6
AF Field Personnel 4 per facility
AT Personnel 2 per facility

6.3.2 Air Traffic Training

AT personnel will attend operations portion of the AF Operations and Maintenance course. The follow-on training will be provided by AT cadre instructors.

6.4 Class Schedule

The facility class schedule is related to the delivery schedule. Installation of the DVRS will take 1-1/2 to 2 days. Training will begin immediately after the installation. The delivery schedule can be found in the Material Delivery Forecast Module (MDFM). The site AF personnel quota will be entered into the Consolidated Personnel Management Information System (CPMIS).

6.5 Delivery Schedule

The delivery schedule information is developed in the Material Delivery Forecast Module (MDFM). A hard copy is published in the NAS program master schedules as the equipment delivery report. The report, which follows the summary milestone schedule for each project, is the latest officially published schedule. It contains information on the sequence and dates of equipment delivery to specific sites.

6.6 Attrition Training

The attrition training course for the DVRS is course number 47014, Digital Voice Recording System Maintenance (CBI/MM)

1. Prerequisites: 44006, Basic Multichannel Recorder Theory

2. Training Administration: Computer Based Instruction (CBI) platform required.

3. Course Length: 24 hours

4. Course Description: Course 47014 provides training for technician on the DVRS to the LRU level. The course is 38% correspondence study and 62% computer based exercises. The final exam is computer based. Subjects include overview and operation, system configuration, preventive and corrective maintenance procedures, diagnostic error codes and use of program documentation.

5. Distribution: Course 47014 was distributed with the November 1997 CBI courseware to all FAA sites that have a CBI platform. Any updates to the course will be provided during the normal distribution of the CBI courseware.

CHAPTER 7. DIRECT WORK STAFFING

This section identifies direct work employee hours required to perform all maintenance actions necessary to maintain the DVRS equipment.

7.1 Staffing Requirements

Technicians will not be solely dedicated to the maintenance of DVRS since preventive and corrective maintenance is expected to consume only a small portion of their available time. Current planning is for cross utilization in the maintenance of other National Airspace equipment.

Workloads associated with the DVRS are captured under new facility type "VRS", Voice Recorder System. Maintenance staffing levels are derived by AFZ-200 in accordance with FAA Order 1380.40B, Airway Facilities Sector Level Staffing Standard System and FAA Order 1375.4A, Standard Data Elements and Codes Facility Identification and Supplemental Standards. Maintenance staffing levels are presented in the following Table 7.2-1.

TABLE 7.2-1. Direct Work Staffing Levels

Facility Code	Class	Maintenance Man Years Per System
46JT	G	0.186

CHAPTER 8. MAINTENANCE SUPPORT FACILITIES

8.1 General

This section describes space and facility requirements for maintenance of the DVRS equipment and for storage space for spares and support equipment.

8.2 Contractor Responsibilities

No special facility requirements have been identified.

8.3 Government Responsibilities

No special requirements have been identified by the Government for maintenance support facilities.

CHAPTER 9. PACKAGING, HANDLING, STORAGE, AND TRANSPORTATION

9.1 General

This section describes the Packaging, Handling, Storage, and Transportation (PHS&T) requirements for shipment of the DVRS equipment and for the supporting equipment and spares.

9.2 Packaging Requirements for System Equipment

System equipment being shipped directly to each designated site location for immediate installation will be prepared for delivery in accordance with (IAW) ASTM-D-3951.

9.3 Packaging Requirements for Spares

1. Site spares shipped directly to sites from the contractor will be packaged IAW ASTM-D-3951 Standard Practice for Commercial Packaging, and marked IAW supplemental requirements.

2. All items identified as electrostatic discharge sensitive, will be preserved/packaged/packed and marked IAW ASTM-D-3951.

9.4 Marking

All components, equipment and spares will be marked in accordance with the marking requirements of ASTM-D-3951. Each unit container, intermediate and exterior shipping container, will be marked with the following, as applicable:

- National Stock Number
- Serial Number
- Part Number
- Warranty Expiration Date
- Contract Number
- Contract Line Item Number

9.5 Transportation Mode Selection

The FAA will route parts returned to the contractor for repair using the most economical means to the Government.

CHAPTER 10. TECHNICAL DATA

10.1 General

This section discusses the technical documentation to be developed by the contractor and/or by the Government.

10.2 Requirements

The contractor is responsible for providing an operations and maintenance manual for the DVRS. Two copies of the manual will be provided to each site receiving the DVRS. The manual number for the operations and maintenance manual is TI 6670.11. The national stock number (NSN) for the operations and maintenance manual is 0056-00-480-0445.

10.3 Quality Control

The contractor will utilize established quality control procedures and maintain a Quality Control Program in accordance with FAA-STD-013d or ISO 9002 (ANSI/ASQC Q9002-1994 American National Standard, Quality Systems- Model for Quality Assurance in Production, Installation and Servicing).

10.4 Configuration Management

Configuration management procedures for the DVRS will be maintained in accordance with contractor's current configuration management program. Configuration control will cover hardware, software, firmware and documentation.

In accordance with FAA Order 1100.157, AOS-510 will be responsible for maintaining the baseline configuration for the DVRS in the operational support environment.

When accepted by the Government, the DVRS equipment shall be baselined. Changes generated by the contractor after the baseline has been established will provide the same form, fit and function.

APPENDIX A. APPLICABLE DOCUMENTS

<u>Number</u>	<u>Title</u>
ASTM-D-3951	Standard Practice for Commercial Packaging
FAA-STD-013d	FAA Standard Quality Control System Requirements
FAA Notice N6670.20	Interim Certification, Standards and Tolerances
FAA Order 6670.4D	Maintenance of Multichannel Voice Recorder Equipment
FAA Order 4250.9B	Field Material Management and Control Handbook
FAA Order 1100.157	National Engineering Field Support Division Maintenance Program Procedures
FAA Order 1375.4A	Standard Data Elements and Codes Facility Identification and Supplemental Standards
FAA Order 1380.40B	Airway Facilities Sector Level Staffing Standard System
FAA Order 1800.58A	National Airspace Integrated Logistics Support (NAILS) Policy
FAA Order 4800.2C	Utilization and Disposal of Excess and Surplus Personal Property
FAA Order 6200.4D	Test Equipment Management Handbook
ISO 9002	ANSI/ASQC Q9002-1994 American National Standard, Quality Systems-Model for Quality Assurance in Production, Installation and Servicing)
TIB 6670-11	Technical Instruction Book (DVRs)

Appendix B. ACCRONYMS, ABBREVIATIONS, AND DEFINITIONS

AFSS	Automated Flight Service Station
AF	Airway Facilities
AT	Air Traffic
A/G	Air-to-ground
APLL	Associate Product Lead for Logistics
ARTCC	Air Route Traffic Control Center
ATCT	Airport Traffic Control Tower
AC	Alternating Current
CIP	Capital Investment Plan
COTS	Commercial-off-the-Shelf
CPMIS	Consolidated Personnel Management Information System
CRS	Contractor Repair Service
DAT	Digital Audio Tape
DRU	Digital Recorder Unit
DVRS	Digital Voice Recorder System
E&R	Exchange and Repair
FAA	Federal Aviation Administration
FAALC	Federal Aviation Administration Logistics Center
FASA	Federal Acquisition Streamlining Act
G/G	Ground-to-ground
GPS	Global Positioning System
IAW	In Accordance With
ILSP	Integrated Logistics Support Plan
LRU	Line Replaceable Unit
MCR	Multichannel Recorder
MDFM	Material Delivery Forecast Module
NAILS	National Airspace System Integrated Logistics Support
NAILSMT	National Airspace System Integrated Logistics Support Management Team
NAS	National Airspace System
NDI	Non-development Item
NISC	NAS Implementation Support Contractor
PHS&T	Packaging, Handling, Storage, and Transportation
SMO	System Maintenance Office

Appendix B. ACCRONYMS, ABBREVIATIONS, AND DEFINITIONS

TRACON	Terminal Radar Approach Control
TDB	Training Database
UUT	Unit Under Test
WC	Work Center

Appendix B. ACCRONYMS, ABBREVIATIONS, AND DEFINITIONS

Administrative Delay Time: The time required for maintenance personnel to be alerted and move to the equipment when a failure occurs.

Availability: The probability of specified operability at any instant in time over the service life of the system. It is the ratio of up-time to total time.

Contractor Repair Service (CRS) Program: This method and term are used when the contractor does not have an established customer repair service available and the FAA develops an annual repair contract for E&R items.

Corrective Maintenance: Maintenance performed on a system as a result of a failure to restore it to a specific standard and tolerance.

Integrated Logistics Support Plan (ILSP): A document that describes the integrated logistics support program requirements, task, and milestones for an acquisition program. The ILSP is developed under direction of the APLL with input from the NAILSMT. The ILSP is an iterative document and is updated for each key decision point.

Line Replaceable Unit (LRU): The lowest unit to be replaced within the system during site maintenance. It is a separate, installable, physical package performing a single function or group of closely related functions.

National Airspace Integrated Logistics Support (NAILS): A disciplined, approach to plan and integrate support considerations into design, acquire the necessary initial support for the subsystem/equipment, and identify life-cycle support requirements.

National Airspace Integrated Logistics Support Management Team (NAILSMT): A team formed for each acquisition which identifies requirements and plans and coordinates and integrates a logistics structure which will ensure systems are supportable prior to deployment. The team includes a representative for each logistics element.

Preventive Maintenance: Scheduled maintenance performed on the system to extend its operational life, reduce failures, and/or realign a system.

APPENDIX C DVRS POINTS OF CONTACTS

NAME	ORGANIZATION	TELEPHONE
George Clark	APLL, Communications and Navigation Division, ARN-200	202-493-4789
Jim Little	IPT Lead for Voice Switching and Recording, AND-320	202-493-4651
Andy Michel	COTR, AND-320	202-493-4795
Steve Bobby	Contracting Officer, ASU-330	202-493-4786
Bill Howard	Communications and Navigation Division (AF Requirements), ARN-200	202-493-0707
Wesley Boyd	Communications Systems Engineering, AOS-510	405-954-4435
Dan Hargraves	Training Division, AFZ-100	202-267-3044
Regina West	FAA Logistics Center, AML-6000	405-954-5627
Larry Driver	FAA Academy, AMA-410	405-954-4217
Bill Howard (Acting)	Communications and Navigation Division (AT Requirements), ARN-200	202-493-0707
Wayne Matthiesen	Contractor Support, ARN-200/NISC	202-646-5364
Robert Newman	NAS Implementation Specialist, ANS-700/NISC	202-646-2178
REGIONAL ASSOCIATE PROGRAM MANAGERS		
Mel Leskinen	ANI-700	907-271-5199
Doug Edwards	ANI-500	816-329-3517
Steve LoVerde	ANI-200	718-553-3469
Doug Weaver	ANI-400	847-294-8187
Jack Emborg	ANI-100	781-238-7808
Jackie Baldwin	ANI-800	206-227-2435
Steve Duckett	ANI-300	404-305-6527
Melissa Nelson	ANI-700	817-222-4680
Gary Pettengill	ANI-900	310-725-3495

APPENDIX D DISPOSAL PLAN

The following is the multichannel recorder disposal plan:

**Multichannel Recorder (MCR)
And
High Capacity Recorder (HCR)/ High
Capacity Voice Recorder (HCVR)**

Disposal Plan

Product Lead, Voice Switching and
Recording Product Team, AND-320

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1.0 Introduction

The goal of this plan is to assist in the systematic removal of existing analog voice recorders, spares, and associated support equipment from the FAA inventory as they are replaced by current production Digital Voice Recording Systems (DVRS). In support of this goal, this plan addresses the requirements of FAA Order 4800.2, Utilization and Disposal of Excess and Surplus Personal Property. This plan will be made an attachment to Integrated Logistics Support Plans (ILSPs) for the systems to which it pertains. This plan will address FAA facilities only and does not apply to Department of Defense (DoD) facilities.

It shall be the strategy of the Voice Switching and Recording Integrated Product Team, AND-320, to affect removal of the affected equipment and systems from the NAS, to reutilize assets to the maximum extent practical and to conserve support resources consistent with optimum life-cycle cost. Upon removal of the affected equipment, AFR will coordinate the cessation of support with the Regions and subsequently request the FAALC to dispose of excess materials. Equipment that is declared as excess shall be disposed of in accordance with existing FAA policy and procedure as described herein and further support to recipients of such equipment through sale or donation will not be available.

Total disposal shall be managed in accordance with the Federal Property Management Regulations (FPMR). Deviations from the procedures herein shall have prior approval from the Voice Switching and Recording Product Team, AND-320.

2.0 Schedule

The schedule for disposal and discontinuation of support for the equipment described herein will be contingent upon installation of the Digital Voice Recording System (DVRS). Simultaneous operation of existing and replacement systems will be provided for. A detailed schedule of DVRS installations will be provided by the Voice Switching and Recording Product Team, AND-320. For planning purposes, the following generic schedule is provided:

DVRS install	C-30 days
System cutover	C-0 days
Site notification of cutover	C+1 day
Maintenance support discontinued	C+2 days
Existing system packaging & handling	C+5 days
Existing system	C+10 days

transportation

C = cutover determined by site

3.0 System Description

There are three categories of voice recorders that are the subject of this plan. These categories are comprised of at least 5 different recorders of three general types that have entered service at different times over the past 15 to 20 years. All of the recorders that are covered by this plan are currently used to record time-stamped operational communications in the Air Traffic Control (ATC) environment. These recorders are similar to those used in financial and brokerage businesses as well as local emergency service dispatch centers (911 centers).

3.1 Multichannel Recorder (MCR)

The inventory of MCRs includes both Magnasync (models TR1710 and TR1720) and Dictaphone (model 5000 series) 10 and 20-channel reel-to-reel analog voice recorders. They were supported by a reproducer system used for duplication of recordings. This equipment is used in Airport Traffic Control Towers (ATCTs) and Terminal Radar Approach Control (TRACON) facilities as well as Automated Flight Service Stations (AFSS'). First fielded in the late 1970's these recorders will be over 15 years old when replacement is planned to begin in 1996. The acquisition cost of MCRs and the reproducers was as follows:

Model 5102 10-channel Recorder System	\$6,377.	(NSN 8200-00-540-25551)
Model 5103 Reproducer System	\$3,485.	(NSN 8200-00-540-35571)
Model 5205 20-channel Recorder System	\$8,481.	(NSN 8200-00-540-25561)
Model 5103 Reproducer System	\$3,565.	(NSN 8200-00-540-25571)

3.2 High Capacity Recorder (HCR)

The inventory of HCRs includes 3-M 152-channel recorders (FA Type 8966). These recorders were used in Air Route Traffic Control Centers (ARTCCs) and pre-date the High Capacity Voice Recorders discussed below. The acquisition cost of a HCR is not available.

3.3 High Capacity Voice Recorder (HCVR)

The inventory of HCVRs includes Magnasync (model 5000 series) 60-channel reel-to-reel analog voice recorders. These recorders are used in ARTCCs and are the successors to the HCR and were fielded from 1992 through 1995. They were also supported by a reproducer system. Fielding of the HCVR was discontinued in favor of the Digital Voice Recording System (DVRS) under Capital Improvement Program project 22-11. The acquisition cost of a HCVR was as follows:

Specialist Plus Recorder/Reproducer System	\$14,468
(NSN 8200-00-120-43601)	
Specialist Plus Portable Reproducer System	\$ 7,342
(NSN 8200-00-120-43611)	

3.4 Magnetic Tape Winder and Cleaner

The FA 9452 magnetic tape winder and cleaner (BowWinder Model 632) supports periodic maintenance of the current analog reel-to-reel

recording tapes. The acquisition cost of a BowWinder in 1970 was \$22,000. Remanufacture / overhaul of the BowWinder costs \$15,000.

4.0 Current System Maintenance Concepts

4.1 Multichannel Recorder

Site maintenance for the MCRs is performed by FAA electronic technicians. Limited depot support is provided by the FAALC.

4.2 High Capacity Recorder

The HCRs are maintained on site by FAA electronic technicians. Limited depot support is provided by the FAALC. Because these systems are no longer manufactured, there is no contractor support of any kind. Consequently, depot repair support is not available.

4.3 High Capacity Voice Recorder

Site maintenance is performed by FAA electronic technicians. Supply support is provided by the FAALC and depot repair is performed by Magnasync.

4.4 BowWinder Tape Winder and Cleaner

The BowWinder equipment is maintained on site by FAA electronic technicians. Depot support is obtained directly from the manufacturer by the Regions.

5.0 System Life Cycle / Replacement System

System life cycles for the older recording systems were not documented to the same level that the FAA does today. Applying a 20 year life cycle to the subject recorders as a group beginning with their respective acquisitions indicates that the existing analog recorders are nearing the end, or are past, their life cycle. From a practical standpoint there are factors related to the current NAS environment that affect the timing of disposal actions for these recorders. These factors include reduction of operation and support costs, system availability, and system supportability.

5.1 Multichannel Recorder

The life cycle for the MCR will end with replacement by the DVRS projected to be substantially complete by 2000. The MCRs will be replaced by the DVRS beginning in 1996 and is expected to be substantially complete by 2000.

5.2 High Capacity Recorder

The life cycle for the HCR has ended and disposition of the obsolete equipment is required as of this writing. Because of the age, condition and supportability of the equipment it will not be reassigned within the FAA.

5.3 High Capacity Voice Recorder

The life cycle for the HCVR is projected to end when the last unit is replaced by the DVRS. Removals of HCVRs will begin in 1996 and are projected to be complete by 2002.

5.4 BowWinder Tape Winder and Cleaner

As the BowWinder equipment supports the existing analog recorders, its life-cycle is predicated on that of the above recorders. Its life-cycle

will end when the last analog voice recorder is removed from operational service.

5.5 Planned DVRS Sites

A current listing of sites planned to receive the DVRS is available in each Region through the Regional Associate Program Manager (RAPM). The list provides the both the sites and a near term schedule for DVRS delivery. The master listing is available through the Voice Switching and Recording Product Team, AND-320, Projects Bulletin Board or by contacting Mr. Andy Michel, AND -320, at (202) 358-5046.

6.0 National Requirements

6.1 Multichannel Recorder

A quantity of MCRs will be retained by the FAALC to support the transition to the DVRS. This quantity will be determined by the FAALC. A reproducer unit will be retained at FAA headquarters should the need arise to review archived tapes.

6.2 High Capacity Recorder

Because the HCR is obsolete and no longer supportable, no further efforts will be undertaken to provide supply support, depot repair support or to cannibalize surplus units for spare parts. The FAALC will discontinue support for this system in 1996. A reproducer unit will be retained at FAA headquarters should the need arise to review archived tapes. Reproducer units may also be retained at Regional Offices or field sites to support playback of archived tapes.

6.3 High Capacity Voice Recorder

The FAALC will recover a limited number of HCVR assets to support these systems during the transition to the DVRS.

6.4 BowWinder Tape Winder and Cleaner

Excess BowWinder Tape winder and Cleaner assets should be coordinated with the FAALC. The point of contact is Ron Kuhlman, (405) 954-4102. There are no national requirements for this equipment and it may be disposed of upon completion of DVRS installation and appropriate screening.

7.0 Reclamation / Reuse

7.1 Responsibilities

The FAALC, AML-640 will be responsible for coordinating reclamation of recorder assets.

7.2 Disassembly, Test, Restocking, Packaging Handling & Transportation (PHS&T)

Disassembly, test, restocking and PHS&T for reclaimed recorder assets will be the responsibility of AML-640.

7.3 Costs

The costs of asset recovery to support the above systems will be borne by AML-640.

8.0 Local Requirements

8.1 Site Spares

The costs of cannibalization of obsolete systems for regional and/or site use will be borne by the respective regions.

8.2 Other Needs

The costs of cannibalization of obsolete systems for purposes other than on-site repairs will be borne by the Regions. It should be noted that supply and repair support will be discontinued for the MCRs, HCRs and HCVRs not later than, removal of the last unit of each system type. Support beyond these times will be the responsibility of the Regions.

Due to the need for HCR reproducer units (FA-8966/2) to support archived tapes, regions and sites may retain these units as necessary. Based on regional inputs, no further support from the FAALC will be provided. Regions and /or sites desiring additional spare parts are encouraged to monitor the Logistics and Inventory System (LIS) / Utilization, Screening and Disposal (USD) subsystem to obtain remaining resources.

9.0 Equipment Removal / Disposal Program

9.1 National

MCRs, HCRs, and HCVRs will be removed by site and regional personnel. No contractors will be used for equipment removal. Removals will coincide with the installation of the DVRS unless otherwise coordinated by AND-320 and ALM-700. Subsequent disposal of surplus equipment shall be conducted in accordance with the most current issue of FAA Order 4800.2. Information pertinent to the disposal process is provided in the following subsections.

9.2 Special Disposal Authority

MCRs, HCRs and HCVRs are not covered by special disposal authority requirements.

9.3 Responsibilities

The following personnel and organizations will be responsible for executing the responsibilities detailed in this plan.

9.3.1 Property Custodians

A. Excess Reporting

At least 90 days prior to the scheduled DVRS equipment replacement for each affected facility in each Sector; property custodians should contact the FAALC, AML-641, at (405) 954-5563 to obtain initial disposition instructions. The FAALC will determine the types and quantities, if any, of equipment to be recovered to support the transition from the existing recorder inventory to the DVRS. If disposition instructions are not received from the FAALC within 45 days, contact AML-641, at (405) 954-5563 for status.

B. Disposition Guidance for Excess Analog Voice Recorders

1. Required Items.

a. The items identified as excess and approved for shipment to the FAALC will be shipped as whole assets (including all circuit cards, modules, etc.) They will be boxed and marked with the appropriate NSN and forwarded to the FAALC or other designated consignee. If spare circuit cards, modules, unused tapes, etc. are also required by the FAALC, they will also be marked and boxed as appropriate. Under no circumstances should any additional items be included in this shipment which are not specifically identified by the FAALC.

2. Remaining Equipment.

a. Dispose of remaining equipment in accordance with the latest version of FAA Order 4800.2. Offers to sell equipment described in this plan shall indicate that the FAA considers the equipment obsolete and no longer provides logistical or technical support for it.

b. Dispose of all used recording tapes after archiving requirements are met and render them unusable.

C. Processing Instructions

1. Contact Mr. Larry Baranski, Packaging Specialist, AML-340, at (405) 954-5446 to receive instructions on transportation, proper packaging and how to obtain packaging materials.

NOTE: The FAALC will be responsible for transportation costs associated with shipping replaced equipment to the FAALC as per the disposition instructions provided.

Equipment that is planned to be recovered by the FAALC is identified in Attachment (1) hereto.

9.3.2 Property Managers

A. Excess Reports

Property Managers will provide excess reports in accordance with regional procedures and the latest version of FAA Order 4800.2.

B. Disposition Instructions

The FAALC, AML-641, will provide initial disposition instructions to the Property Custodian with a copy to the Property Manager.

C. Property Record Adjustment

An adjustment to the in-use personal property records shall be made in accordance with regional procedures and the latest version of FAA Order 4800.2.

9.3.3 FAA Logistics Center

It is extremely important that the FAALC utilize as much of the reported excess as is possible. It is equally important that the FAALC not obtain items beyond those that are needed to meet the agency's essential requirements.

A. Excess Reports

Processing of excess reports should be completed within 30 days after receipt of each Excess Report.

1. Upon receipt of applicable excess reports, screen available items to determine if a valid need exists for the items.
2. Indicate to property custodians and property managers those items which are needed and should be shipped to the FAALC or designated consignee.

B. Disposition Instructions

The FAALC will provide all initial disposition instructions to the Property Custodians with copies being sent to the Property Manager. Documentation shall be developed and provided in accordance with the latest version of FAA Order 4800.2.

9.3.5 Communications and Navigation Division, ARN-200

- A. Work with the Voice Switching and Recording Product Team, AND-320, in reviewing and recommending concurrence/non-concurrence with requests for deviation from this plan.
- B. Notify the FAALC, AML-641, of any approved program changes or operational requirements that will impact future FAALC support requirements (e.g., continued operation or reuse of facilities, transfers to military or foreign users, etc.).
- C. Coordinate changes to maintenance data recording systems to reflect disposal.

Questions regarding the disposal of equipment under this plan should be directed to Mr. Bill Howard, ARN-200.6, at (202) 493-0707 or to Mr. George Clark, ARN-200.3, at (202) 493-4789.

10.0 Hazardous Materials Issues

MCRs, HCRs, and HCVRs contain no known hazardous materials.

11.0 Precious Metals Recovery Issues

MCR, HCR and HCVR design do not contain any significant amount of precious metals that warrant special salvage action.

12.0 Environmental Issues

Removal of MCRs, HCRs and HCVRs will not create or impact environmental issues. No environmental impact statement or assessment is required.

13.0 Real Property Issues

Removal of MCRs, HCRs and HCVRs will not create or impact real property issues requiring building renovation or restoration.

14.0 Legal Issues

Removal of MCRs, HCRs and HCVRs will not create or impact legal issues. The design and deployment of the DVRS as the replacement system has been fully coordinated with the Office of General Counsel, AGC.

This plan does not supersede existing requirements for archiving of voice recordings. Archived tapes will be maintained in accordance with the Facility Operations Manual.

15.0 Safety Issues

Removal of MCRs, HCRs and HCVRs will not create, or impact, safety issues.

16.0 Labor Relations Issues

Removal of MCRs, HCRs and HCVRs will not create or impact issues affecting the unions. Deployment of the DVRS as the replacement system has been fully coordinated with PASS and NATCA.

17.0 PHS&T Issues

None.

18.0 Political/International/Historical Issues

Removal of MCRs, HCRs and HCVRs will not create, or impact, political or international issues. No historical issues or equipment of historical significance per FAA Order 1200.8 are involved with disposal of equipment under this plan.

APPENDIX 1. RECOVERY AND DISPOSAL CANDIDATES LIST

FAALC Voice Recorder Equipment Recovery Candidate List

Magnasync TR-1710 10-channel recorders

Magnasync TR-1720 20-channel recorders

Magnasync 60-channel recorders & reproducers

Dictaphone 20-channel recorders & reproducers

Bulk degausser units

BowWinder Model 632 Tape Winder and Cleaner

Voice Recorder Equipment Disposal Candidate List

Magnasync TR-1500 recorders & reproducers

Dictaphone 10-channel recorders & reproducers

3-M High Capacity Recorders

BowWinder Model 632 Tape Winder and Cleaner

APPENDIX E EQUIPMENT RETURN FORM

The following is the Equipment Return Form:

LITTON DENRO

Digital Voice Recorder System (DVSR) Program

Equipment Return Document

This one page form is provided to FAA technicians for them to record necessary information when returning an unserviceable DVRS part to the Litton Denro depot. Although it accompanies the replacement part, **it must be returned with the defective part** as soon as possible but not later than 20 calendar days after receipt of the replacement part.

Technicians are requested to provide as much information as possible regarding the “reason for return” to assist the depot in troubleshooting the returned part. Include the troubleshooting steps, as appropriate, used in determining the part’s need for repair.

Site Returning Part	(Site fills in)
Item Description	
Quantity	
Part Number	
LIS Voucher Number	

Reason for Returning (Site fills in)

Return the defective part and this completed form to:

**LITTON DENRO, INC.
Attn: DVRS DEPOT
15883 Gaither Drive
Gaithersburg MD 20877**

Your assistance in returning unserviceable parts will result in more accurate demand data and more efficient supply support.

DVRS E&R Form

